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10/542,884	07/20/2005	Gregory P. Carman	58086-223840	8378

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EXAMINER	
FERGUSON, MICHAEL P	
ART UNIT	**PAPER NUMBER**
3679	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/542,884	CARMAN ET AL.	
	Examiner	Art Unit	
	Michael P. Ferguson	3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-18 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *08/06/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-18 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 (lines 4-9) recites "said operating temperature being above the martensite-austenite transition temperature for said pseudo-elastic material, said pseudo-elastic material being capable of conversion between an austenite state and a martensite state by application of stress to said first body at said engagement surface, said application of stress to said engagement surface thereby converting said first body from an unloaded body to a loaded body". It is unclear as to which martensite-austenite transition occurs due to the application of stress; whether from martensite to austenite state, or whether from austenite to martensite state. It is unclear as to what constitutes the "stress"; whether the stress is a structurally or functionally distinct element from the application of heat. It is unclear as to at which martensite-austenite state the loaded body occurs. Claim 1 (lines 16-20) recites "an engagement mechanism that provides reversible contact of said indenter surface with said engagement surface and provides for the application of sufficient stress to said engagement surface to provide reversible conversion of said engagement surface from said unstressed shape to said stressed shape while said operating temperature remains above said martensite-austenite

transition temperature". It is unclear as to what is meant by "reversible"; whether the application of stress enables both the transition from the martensite to austenite state, and the transition from the austenite to martensite state; or enables only one-directional transition from one state to the other. It is unclear as to whether the system operates constantly above the transition temperature; the conversion from martensite to austenite state, and thus the conversion between the unstressed-stressed states, requiring a change from below to above the transition temperature. How can the restoration from martensite to austenite state occur if constantly operating above the transition temperature and never below the transition temperature, in order for the martensite state to occur and for the austenite state to be restored? Claims 2-9 depend from claim 1 and are likewise rejected.

Claim 10 (lines 4-9) recites "said operating temperature being above the martensite-austenite transition temperature for said pseudo-elastic material, said pseudo-elastic material being capable of conversion between an austenite state and a martensite state by application of stress to said first body at said engagement surface, said application of stress to said engagement surface thereby converting said first body from an unloaded body to a loaded body". It is unclear as to which martensite-austenite transition occurs due to the application of stress; whether from martensite to austenite state, or whether from austenite to martensite state. It is unclear as to what constitutes the "stress"; whether the stress is a structurally or functionally distinct element from the application of heat. It is unclear as to at which martensite-austenite state the loaded body occurs. Claim 1 (lines 16-20) recites "providing an engagement mechanism for

contacting said indenter surface with said engagement surface to apply sufficient stress to said engagement surface to convert of said engagement surface from said unstressed shape to said stressed shape while said operating temperature remains above said martensite-austenite transition temperature". It is unclear as to whether the system operates constantly above the transition temperature; the conversion from martensite to austenite state, and thus the conversion between the unstressed-stressed states, requiring a change from below to above the transition temperature. How can the restoration from martensite to austenite state occur if constantly operating above the transition temperature and never below the transition temperature, in order for the martensite state to occur and for the austenite state to be restored? Claims 11-18 and 20 depend from claim 10 and are likewise rejected.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Lortz et al. (US 5,722,709).

As to claim 1, Lortz et al. disclose a system for releasable engagement of two bodies, the system comprising:

a first body **14,16** comprising an engagement surface, the engagement surface comprising a pseudo-elastic material, the pseudo-elastic material being at an operating

temperature, the operating temperature being above the martensite-austenite transition temperature for the pseudo-elastic material, the pseudo-elastic material being capable of conversion between an austenite state and a martensite state by application of stress to the first body at the engagement surface (the transition from martensite to austenite state occurring due to molecular stress due to heating above the transition temperature), the application of stress to the engagement surface thereby converting the first body from an unloaded body (occurring at martensite state) to a loaded body (occurring at austenite state) wherein the engagement surface of the unloaded body has an unstressed shape and the engagement surface of the loaded body has a stressed shape wherein the stressed shape is different from the unstressed shape;

a second body **17** comprising an indenter surface for contacting the engagement surface of the first body, the indenter surface being formed by one or more teeth that extend from the second body for engagement with the first body, the second body comprising a material that is harder than the pseudo-elastic material in the martensite state; and

an engagement mechanism **20,21** that provides reversible contact of the indenter surface with the engagement surface and provides for the application of sufficient stress to the engagement surface to provide conversion of the engagement surface from the unstressed shape to the stressed shape while the operating temperature remains above the martensite-austenite transition temperature, wherein the stressed shape conforms to the shape of the indenter teeth (at both martensite-austenite states, the shape of

element **14** conforms in shape to the indenter teeth **17**; Figures 1-5, column 4 lines 17-32).

As to claim 2, Lortz et al. disclose a system wherein the operating temperature is within 40°C above the martensite-austenite transition temperature (column 3 lines 31-36).

As to claim 3, Lortz et al. disclose a system wherein the operating temperature is between room temperature and 300°C (column 3 lines 31-36).

As to claim 4, Lortz et al. disclose a system wherein the engagement surface of the first body **14,16** is non-planar (Figure 2).

As to claim 5, Lortz et al. disclose a system wherein the engagement surface **14,14** surrounds the indenter body **17** (Figure 1).

As to claim 6, Lortz et al. disclose a system wherein the indenter body surrounds (extends beyond the upper and lower surfaces of) the engagement surface (Figure 1).

As to claim 7, Lortz et al. disclose a system wherein the indenter body **17** is a gear (threaded surface of bolt **17** defines a gear surface for engaging first body **14,16**).

As to claim 8, Lortz et al. disclose a system wherein the engagement mechanism comprises a linear motor (inherently, the assembly of electric heater **21** and actuation device **21** comprises a linear motor).

As to claim 9, Lortz et al. disclose a system wherein the engagement mechanism **20,21** comprises a clamping apparatus for clamping the first and second bodies together (Figures 1, 2, 4 and 5).

As to claim 10, Lortz et al. disclose a method for engaging and disengaging two bodies, the method comprising:

providing a first body **14,16** comprising an engagement surface, the engagement surface comprising a pseudo-elastic material, the pseudo-elastic material being at an operating temperature, the operating temperature being above the martensite-austenite transition temperature for the pseudo-elastic material, the pseudo-elastic material being capable of conversion between an austenite state and a martensite state by application of stress to the first body at the engagement surface (the transition from martensite to austenite state occurring due to molecular stress due to heating above the transition temperature), the application of stress to the engagement surface thereby converting the first body from an unloaded body (occurring at martensite state) to a loaded body (occurring at austenite state) wherein the engagement surface of the unloaded body has an unstressed shape and the engagement surface of the loaded body has a stressed shape wherein the stressed shape is different from the unstressed shape;

providing a second body **17** comprising an indenter surface for contacting the engagement surface of the first body, the indenter surface being formed by one or more teeth that extend from the second body for engagement with the first body, the second body comprising a material that is harder than the pseudo-elastic material in the martensite state;

providing an engagement mechanism **20,21** for contacting the indenter surface with the engagement surface to apply sufficient stress to the engagement surface to convert the engagement surface from the unstressed shape to the stressed shape while

the operating temperature is above the martensite-austenite transition temperature, wherein the stressed shape conforms to the shape of the indenter teeth (at both martensite-austenite states, the shape of element **14** conforms in shape to the indenter teeth **17**; Figures 3); and

removing the indenter surface from contact with the engagement surface to thereby provide return of the engagement surface to the unstressed shape (Figures 1-5, column 4 lines 17-32).

As to claim 11, Lortz et al. disclose a method that includes the additional steps of:

moving the first and second bodies relative to each other after the step of removing the indenter surface **17** from contact with the engagement surface **14,16** to thereby provide repositioned first and second bodies; and

contacting the indenter surface with the engagement surface of the repositioned first and second bodies to apply sufficient stress to the engagement surface to convert the engagement surface of the repositioned bodies from the unstressed shape to the stressed shape wherein the stressed shape conforms to the shape of the indenter teeth (at both martensite-austenite states, the shape of element **14** conforms in shape to the indenter teeth **17**; Figures 1-5, column 4 lines 17-32)..

As to claim 12, Lortz et al. disclose a method wherein the operating temperature is within 40°C above the martensite-austenite transition temperature (column 3 lines 31-36).

As to claim 13, Lortz et al. disclose a method wherein the operating temperature is between room temperature and 300°C (column 3 lines 31-36).

As to claim 14, Lortz et al. disclose a method wherein the engagement surface of the first body **14,16** is non-planar (Figure 2).

As to claim 15, Lortz et al. disclose a method wherein the engagement surface **14,14** surrounds the indenter body **17** (Figure 1).

As to claim 16, Lortz et al. disclose a method wherein the indenter body **17** surrounds (extends beyond the upper and lower surfaces of) the engagement surface **14,16** (Figure 1).

As to claim 17, Lortz et al. disclose a system wherein the indenter body **17** is a gear (threaded surface of bolt **17** defines a gear surface for engaging first body **14,16**).

As to claim 18, Lortz et al. disclose a method wherein the engagement mechanism comprises a linear motor (inherently, the assembly of electric heater **21** and actuation device **21** comprises a linear motor).

As to claim 20, Lortz et al. disclose a method wherein the engagement mechanism **20,21** comprises a clamping apparatus for clamping the first and second bodies together (Figures 1-5).

Response to Arguments

5. Applicant's arguments filed August 2, 2007 have been fully considered but they are not persuasive.

As to claims 1 and 10, Attorney argues that:

Lortz et al. do not disclose a system comprising an engagement mechanism that provides reversible contact of the indenter surface with the engagement surface and provides for the application of sufficient stress to the engagement surface to provide conversion of the engagement surface from the unstressed shape to the stressed shape *while the operating temperature remains above the martensite-austenite transition temperature*.

Examiner disagrees. As to claims 1 and 10, Lortz et al. disclose a system comprising an engagement mechanism **20,21** that provides contact of the indenter surface **17** with the engagement surface **14** and provides for the application of sufficient stress to the engagement surface to provide conversion of the engagement surface from the unstressed shape (occurring at martensite state) to the stressed shape (occurring at austenite state) while the operating temperature is above the martensite-austenite transition temperature.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Ferguson whose telephone number is (571)272-7081. The examiner can normally be reached on M-F (6:30am-3:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on (571)272-7087. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MPF
10/04/07

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